

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
22 December 2005 (22.12.2005)

PCT

(10) International Publication Number  
WO 2005/121707 A2

(51) International Patent Classification<sup>7</sup>: G01C 21/32 (74) Agent: SLUSKY, Ronald D.; 353 West 56th St-, Suite 5L, New York, New York 10019 (US).

(21) International Application Number: PCT/US2005/019446 (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 28 May 2005 (28.05.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 60/577,001 3 June 2004 (03.06.2004) US

(71) Applicant (for all designated States except US): MAKING VIRTUAL SOLID, L.L.C. [US/US]; 1019 Boulevard, New Milford, New Jersey 07646 (US).

(72) Inventors; and

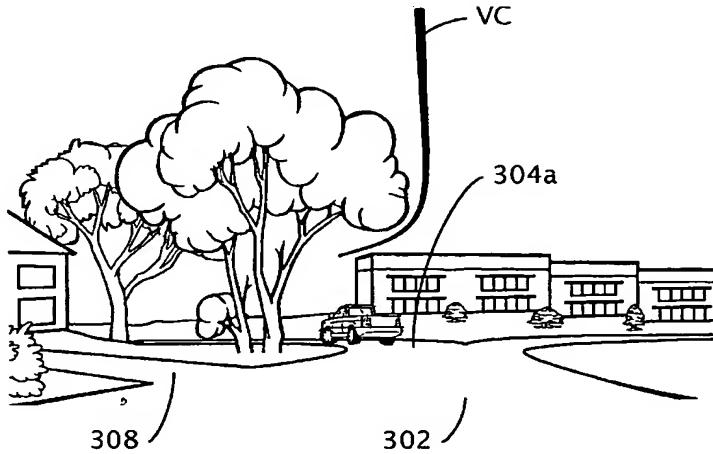
(75) Inventors/Applicants (for US only): GRABOWSKI, Christopher T. [US/US]; 237 East 20th St., Apt. 9C, New York, New York 10003 (US). ZAMOJDO, Thomas [US/US]; 237 East 20th St., Apt. 9C, New York, NY 10003 (US).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:  
— of inventorship (Rule 4.17(iv)) for US only

{Continued on next page}

(54) Title: EN-ROUTE NAVIGATION DISPLAY METHOD AND APPARATUS USING HEAD-UP DISPLAY



(57) Abstract: In an en-route navigation system such as for a vehicle, an image of a cable is presented as a navigation object in a head-up display to indicate a route that the vehicle should follow. In particular embodiments the cable appears to an observer to be a real cable existing in the landscape and extending higher than the head of the observer as would, for example, a trolley cable. The cable is illustratively displayed volumetrically and with an optic flow that is consistent with the optic flow of the landscape when the vehicle is moving, thereby creating the impression that it is real. As a result, the cable can be displayed without any accompanying images that correlate points on the cable with locations in the landscape and yet nonetheless serve as a very useful tool for indicating to a driver the route over which the vehicle should go. The cable may be in any of a number of forms including a continuous line, a line with non-closely-spaced gaps, a line having non-closely-spaced segments that have a different luminance from the rest of the line or a string of closely-spaced objects.

WO 2005/121707 A2



**Published:**

— without international search report and to be republished upon receipt of that report

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*